

PATENT

AMENDMENTS TO THE CLAIMS

Following is a complete set of claims as amended with this Response. This complete set of claims excludes cancelled claims 2, 8, and 14 and includes amended claims 1, 3, 7, 13, 15, and 20 and new claims 22-28.

1. (Currently Amended) An implantable lead adapted to transmit electrical signals between a connector assembly on a proximal end of the lead and at least one electrode carried by a distal end of the lead, the lead comprising:

a helical fixation element extendable and retractable from the distal end of the lead, the distal end comprising (a) an inner header ~~part~~ tube comprising an electrically conductive material that is substantially transparent fluoroscopically to allow an unobstructive fluoroscopic view of the helical fixation element, the helical fixation element housed within the inner header tube when in a retracted position, and the inner header ~~part~~ tube having a distal end, (b) an outer header ~~part~~ tube comprising an electrically insulating material, the outer header tube being coaxial to the inner header tube, and (c) a distal tip collar attached to the distal end of the inner header ~~part~~ tube, the distal tip collar comprising a material that is substantially opaque fluoroscopically and electrically conductive, and the distal tip collar being electrically coupled to the distal end of the inner header tube.

2. (Cancelled)

3. (Currently Amended) The lead of claim 1 in which:
the inner header ~~part~~ tube comprises a material selected from the group consisting of titanium, MP35N alloy, stainless steel and an electrically conductive polymer.

PATENT

4. (Original) The lead of claim 1 in which:
the collar is made of a material selected from the group consisting of platinum, gold, a platinum/iridium alloy and tantalum.
5. (Original) The lead of claim 1 in which:
the helical fixation element comprises a helix electrode connected to an electrical terminal contact on the connector assembly.
6. (Original) The lead of claim 5 in which:
the helix electrode is substantially opaque fluoroscopically.
7. (Currently Amended) An implantable lead adapted to transmit electrical signals between a connector assembly on a proximal end of the lead and a distal end of the lead for stimulating selected body tissue, the lead comprising:
a helix electrode extendable and retractable from the distal end of the lead, the helix electrode being electrically connected to an electrical contact on the connector assembly, the distal end comprising (a) coaxial inner and outer tubes, the inner tube having a distal end and being made of an electrically conductive material that is substantially transparent fluoroscopically to allow an unobstructive fluoroscopic view of the helix electrode and the outer tube being made of an electrically insulating material, the helix electrode disposed within the inner and outer tubes when in a retracted position, and (b) a distal tip collar attached to the distal end of the inner tube, the distal tip collar being electrically coupled to the distal end of the inner tube, and the collar being made of an electrically conductive material that is substantially opaque fluoroscopically.
8. (Cancelled)
9. (Original) The lead of claim 7 in which:
the collar is electrically isolated from the connector assembly.

PATENT

10. (Original) The lead of claim 7 in which:
the inner tube comprises a material selected from the group consisting of titanium, MP35N alloy, stainless steel and an electrically conductive polymer.

11. (Original) The lead of claim 7 in which:
the collar is made of a material selected from the group consisting of platinum, gold, a platinum/iridium alloy and tantalum.

12. (Original) The lead of claim 7 in which:
the helix electrode is made of an electrically conductive material that is substantially opaque fluoroscopically.

13. (Currently Amended) An implantable lead adapted to transmit electrical signals between a connector assembly on a proximal end of the lead and a distal end of the lead for stimulating selected body tissue, the lead comprising:

a helix electrode extendable and retractable from the distal end of the lead, the helix electrode being electrically connected to an electrical contact on the connector assembly, the distal end comprising (a) coaxial inner and outer tubes, the inner tube having a distal end and being made of a low density, metallic material that is substantially transparent fluoroscopically to allow an unobstructive fluoroscopic view of the helix electrode and the outer tube being made of an electrically insulating material, the helix electrode disposed within the inner and outer tubes when in a retracted position, and (b) a distal tip collar electrically attached to the distal end of the inner tube, the distal tip collar being made of a high density metallic material that is substantially opaque fluoroscopically.

14. (Cancelled)

PATENT

15. (Currently Amended) The lead of claim 44 13 in which:
the collar is electrically connected to an electrical contact on the connector assembly via the conductive inner tube, whereby the collar may be used for mapping the electrical activity of local body tissue.
16. (Original) The lead of claim 13 in which:
the collar is electrically isolated from the connector assembly.
17. (Original) The lead of claim 13 in which:
the inner tube comprises a material selected from the group consisting of titanium, MP35N alloy, and stainless steel.
18. (Original) The lead of claim 13 in which:
the collar comprises a material selected from the group consisting of platinum, gold, a platinum/iridium alloy and tantalum.
19. (Original) The lead of claim 13 in which:
the helix electrode is substantially opaque fluoroscopically.
20. (Currently Amended) The lead of claim 1 in which:
the connector assembly comprises a pin terminal contact, wherein the inner header ~~part~~ tube electrically couples the pin terminal contact to the collar.
21. (Previously Presented) The lead of claim 7 in which:
the inner tube electrically couples the collar to the electrical contact on the connector assembly.

PATENT

22. (New) The lead of claim 1 in which:

the outer header tube has a lumen defined by an inner cylindrical surface, the inner header tube has an outer cylindrical surface, and a diameter of the inner cylindrical surface of the outer header tube is substantially the same as a diameter of the outer cylindrical surface of the inner header tube.

23. (New) The lead of claim 22 in which:

the inner cylindrical surface of the outer header tube directly abuts the outer cylindrical surface of the inner header tube.

24. (New) The lead of claim 1 in which:

the collar is electrically coupled to an electrical contact on the connector assembly via the inner header tube.

25. (New) The lead of claim 7 in which:

the outer tube has a lumen defined by an inner cylindrical surface, the inner tube has an outer cylindrical surface, and a diameter of the inner cylindrical surface of the outer tube is substantially the same as a diameter of the outer cylindrical surface of the inner tube.

26. (New) The lead of claim 25 in which:

the inner cylindrical surface of the outer tube directly abuts the outer cylindrical surface of the inner tube.

27. (New) The lead of claim 13 in which:

the outer tube has a lumen defined by an inner cylindrical surface, the inner tube has an outer cylindrical surface, and a diameter of the inner cylindrical surface of the outer tube is substantially the same as a diameter of the outer cylindrical surface of the inner tube.

PATENT

28. (New) The lead of claim 27 in which:
the inner cylindrical surface of the outer tube directly abuts the outer
cylindrical surface of the inner tube.